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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/871,976	06/04/2001	Akihiko Hosono	401225	3480

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EXAMINER

TRAN, THANH Y

ART UNIT	PAPER NUMBER
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2841

DATE MAILED: 10/01/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/871,976

Applicant(s)

HOSONO ET AL.

Examiner

Thanh Y. Tran

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE ____ MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2 and 5.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 2 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 2 is unclear as to what Applicants mean by “curved wall approximately surrounds openings in a curved form, as view in plan, as peripheral portions of the openings”?

Claim 2 recites the limitation "openings" and “peripheral portions” in lines 2 and 3. There is insufficient antecedent basis for this limitation in the claim.

Claim 12 recites the limitation "gases" and “plasma” in line 2. There is insufficient antecedent basis for this limitation in the claim.

Claim 16 is unclear as to what Applicants mean by “wherein the wall surrounds openings and the openings have a diameter larger than height of the wall”?

Claim 16 recites the limitation "openings" and “wall” in lines 2 and 3. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

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(e) the invention was described in-

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or

(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

3. Claims 1-4, 7 and 15-20 are rejected under 35 U.S.C. 102(e) as being anticipated by Yaniv et al. (U.S. 6,312,303).

With respect to claim 1, Yaniv et al. discloses a carbon body (Fig. 1) that has a thickness and is a thin layer (103) having a front surface and a back surface, at least at the front surface a continuous curved wall having a netlike structure (103, Fig. 1).

With respect to claim 2, as best understood, figure 1 shows the carbon body wherein the curved wall (103) comprising a plurality of openings and peripheral portions.

With respect to claim 3, Yaniv et al. discloses a carbon body (Fig. 1) including an object (102) having a surface on which the carbon body (103) is positioned, the back surface of the carbon body contacting the surface of the object (102), and the curved wall standing up from the surface of the object (102).

With respect to claim 4, figure 4 shows a base (400) that occupies the back surface within the carbon body (204) is a continuous film embedded in the openings.

With respect to claim 7, it should be noted that an electrical current inherently can flow between any two points on the carbon body.

Claims 15-16 recite limitations similar to claims 1 and 2. Yaniv et al. further discloses an electric field emission type electron source (see col. 1, lines 9-20).

With respect to claims 17-20, Yaniv et al. discloses an electric field emission type electron source (Fig. 5) including a cathode electrode (506, 507), and an extraction electrode (508, 509). Yaniv et al. further teaches the carbon body (400, Fig. 5) is positioned in front of the cathode electrode (506, 507), contacting the cathode electrode (506, 507), and the extraction electrode (508, 509) is positioned in front of the carbon body (400); wherein the cathode electrode (507) is positioned in front of the backside extraction electrode; and wherein the cathode electrode (506, 507) is positioned outside the backside extraction electrode (508, 509) and not overlapping with the backside extraction electrode.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 5-6 and 8-14, rejected under 35 U.S.C. 103(a) as being unpatentable over Yaniv et al. (U.S. 6,312,303).

With respect to claim 5, figure 2 of Yaniv et al. shows the curved wall having a crystal structure (see col. 2, lines 27-50). Yaniv et al. does not teach the curved wall having a hexagonal crystal structure with a bottom plane parallel to a direction that crosses the front surface of the carbon body. However, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify the curved wall of Yaniv et al by including a hexagonal crystal structure, since the particular configuration of the curved wall is not significant

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or is anything more than one of numerous configurations a person of ordinary skill in the art would find obvious for the purpose of providing good electron field emission. [See *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459].

With respect to claims 6, 12 and 14, Yaniv et al. does not teach the curved wall has an average thickness of no more than 100 nm; the hydrogen has a concentration range from 25% to 75%, and the object is heated at no more than 700°C. It would have been obvious to a person having ordinary skill in the art at the time the invention was made to choose or design the thickness of 100nm for a curved wall, the temperature of no more than 700°C of the object, and the range from 25% to 75% of hydrogen, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or working ranges involves only routine skill in the art. [In re Aller, 105 USPQ 233].

With respect to claim 8, Yaniv et al. does not teach the object is formed by glass. However, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to implement the object of Yaniv et al. by making of glass material, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. In re Leshi, 125 USPQ 416.

With respect to claims 9-11 and 13, the process steps are inherently performed during the making of product claims 1-8.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Patterson et al. (U.S. 6,181,055) teaches relevant prior art to the invention.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thanh Y. Tran whose telephone number is (703) 305-4757. The examiner can normally be reached on Monday through Thursday and on alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Martin, can be reached on (703) 308-3121. The fax phone number for the organization where this application or proceeding is assigned is (703) 305-3431.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

TYT



**Jayprakash N. Gandhi
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